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## Progress in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States

### Report of the Secretary-General

**Addendum**

**Management of wastes in small island developing States***

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# I. Introduction

1. The present report reviews the general status of waste management in small island developing States, including progress made in achieving the objectives set out in the Programme of Action for the Sustainable Development of Small Island Developing States, as well as impediments to sustainable waste management, and identifies future priority actions at the national, regional and global levels in the field of waste management.

# II. Current situation

2. The environmental problems of small island developing States are closely related to issues that pertain to the sustainable use of natural resources and the environmentally sound management of wastes. The unique social, economic and environmental characteristics of small island developing States, such as high population density, limited availability of land space and the lack of human and financial resources, reduce the choice of appropriate options for sound management of waste. Furthermore, tourists produce large amounts of wastes, especially during the peak tourism period, compounding the difficulty of small island developing States' authorities to manage waste with their limited capacities. The Global Conference on the Sustainable Development of Small Island Developing States stressed the urgent need to develop local strategies and capabilities for the implementation of sustainable waste management within the context of sustainable development. So far, however, there have been few attempts to develop an integrated and comprehensive approach to waste management strategies.

## A. Solid waste management

3. In many cities of small island developing States, the lack of adequate treatment of solid wastes, including industrial wastes, remains one of the major problems to be solved. Waste separation and recycling is still in its early stages in many small island developing States, though some attempts have been made to reduce the amounts of wastes generated. Programmes have not often been implemented due to the lack of capabilities for technical analysis/assessment, planning, financing and public support. In the field of waste separation at source, upon which the promotion of recycling should largely depend, there have been a few systematic activities in small island developing States, related to the recycling of cans or separation of organic material for composting. Recycling is an effective process but in the urban areas of many small island developing States, it is not economically viable.

4. Wastes are disposed of in various ways, such as in landfills or by means of composting, incineration, open burning or indiscriminate dumping on open land or in rivers and coastal waters. There are very few sanitary landfills in small island developing States. Poorly managed landfill sites – particularly open dumping sites, which are still common – seriously threaten environmental safety and increase health hazards. In addition, open dumping and illegal landfills are a common urban eyesore and reduce property values. Solid materials, surface run-off and leachate from wastes can have devastating effects on freshwater and marine ecosystems.

5. Incineration is generally used for the destruction of medical wastes, unused chemicals and other combustible hazardous materials. In many instances, such wastes are burned in semi-open areas, without proper facilities for removing the pollutants and treating the ashes and unburnt materials. In some small island developing States where available land is extremely scarce, incineration may be the only available treatment option. Other options, however, should be carefully evaluated before embarking on incineration, considering the pollution that it causes and the large capital investments and operational costs that it entails. Composting, a traditional practice in small island developing States, is widely used but it is less practical in urban areas. Composting is not only a useful mechanism for reducing the amount of disposed organic waste but it also produces a valuable substitute for artificial fertilizers.

## B. Industrial and hazardous wastes

6. The primary problem in handling industrial and hazardous wastes is that in most cases, there are no proper facilities for their storage and disposal in small island developing States. A large proportion of industrial and hazardous wastes is often disposed of in the municipal solid waste stream or even dumped without any control, although this may be prohibited by law. Leakages are quite common.

7. The sources of industrial wastes in small island developing States are mainly fish processing, manufacturing processes, mining, quarrying and agro-industry, such as sugar and rum production. In a number of small island developing States, oil refining and petrochemical production also generate industrial wastes. Industries are often situated

in areas close to coasts or water bodies, and solid and liquid wastes are directly discharged into them normally with very little if any pretreatment. Probably due to the lack of technological capabilities, end-of-pipe solutions rather than reduction of waste generation are seen as the major option to control pollution resulting from wastes. Major components of hazardous wastes generated in small island developing States are chemicals, including agrochemicals, heavy metals and medical wastes. These are usually incinerated with insufficient emission control equipments, buried at source, or more often disposed of in dump sites without proper control systems. Many small island developing States have still not ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

### C. Wastewater

8. Liquid wastes are major pollutants of freshwater systems – enclosed coastal waters, aquifers and groundwater. Poor or non-existent piped sewerage systems in many rural and urban areas make sewage treatment difficult in small island developing States. Only a fraction of industrial and municipal wastewater is treated before being discharged into the surrounding land and water resources. Since many of the existing systems are operated in an unsanitary manner without proper monitoring, they threaten human health, either directly through the contamination of water supplies or indirectly through the contamination of food and fodder. Effective management strategies for wastewater treatment, including reuse, are lacking in most small island developing States, and when in place they are poorly implemented. Moreover, a lack of technical capabilities to operate and maintain the existing facilities for sewage treatment make it difficult to control wastewater. In small urban and rural areas, such alternatives as composting sewage and the enhanced use of septic tanks have been developed. The septic tank has been an effective treatment method for wastewater in areas occupied by a limited population. A number of problems, however, have been identified, such as limited control over design, lack of sludge removal and poor facilities to dispose of sludge.

### D. Ship-generated or transported waste

9. Solid and liquid wastes generated by ships and cruise vessels and the resulting pollution are of considerable concern to small island developing States. There is almost an entire lack of port reception facilities for accepting ship-borne wastes or for avoiding oil spills in ports. A few international and regional initiatives have been taken to protect ports from such wastes, but much remains to be done for the protection of the marine environment.

### E. Status of related strategies, including legislation and financing

10. Because of the lack of legal and regulatory frameworks for waste management, small island developing States often rely on non-specific legislation, such as public health acts. Enforcement, moreover, is poor because of the limited number of trained officers, cultural and social difficulties, and insufficient institutional arrangements. Waste management departments are generally low-priority establishments within local governments. Strategic planning on waste management has been carried out in many small island developing States for various sectors. However, implementation remains generally inadequate. Efforts at public awareness-raising have been made in almost all small island developing States through formal or informal systems. Their impact, particularly on younger people, has been positive and should facilitate further implementation of scientific waste management in the future.

11. Suitable financial planning for the complete cycle of waste management has not been well developed in most small island developing States, resulting in severely underfunded operations, shortage of proper facilities and trained operators. One of the most disturbing problems is the lack of financial autonomy. Where waste management departments are self-financing, the revenue generated is often used for other purposes. Tools for mobilizing financial resources, such as government budgetary allocations, charge systems and other relevant economic instruments, have yet to be developed and included as core elements of financial strategies. Information on waste management and related technologies suitable for small island developing States are still difficult to access, although numerous reports on various aspects of waste management have been published.

## III. Action taken at the national, regional and international levels

### A. Effort in small island developing States at the national and regional levels

12. The present section covers the policies adopted and measures taken on waste management in small island

developing States since 1994. Most of the activities initiated as a consequence of the Global Conference are still at an early stage of implementation, although the awareness of sustainable management of waste has increased in both the public and private sectors.

### 1. Progress in the Pacific

13. The Pacific small island developing States have been very active in policy planning and public awareness-building activities on waste management. Implementation, however, leaves much to be desired. Several training programmes have been carried out; other initiatives aimed at providing further support are at an advanced stage of planning. A regional waste minimization, management and pollution prevention programme, coordinated by the South Pacific Regional Environment Programme (SPREP), has been formulated and agreed to by all Pacific island countries. The programme is designed to implement proper strategies for the protection, monitoring and control of land-based pollution. Implementation has recently commenced, with the support of Australia, Canada and New Zealand.

14. Pacific island countries do not, generally, have the systems or physical capacity to isolate and dispose of toxic wastes such as pesticides, polychlorinated biphenyls (PCBs), waste oil and heavy metals. Some countries, such as Papua New Guinea and the Marshall Islands, have developed the recycling of waste oil, which is cleaned and reblended with fuel. A local private enterprise in Samoa has also established a recycling system for oil obtained from local garages. At the regional level, hazardous waste management issues are addressed in the Waigani Convention to Ban the Importation into Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement of Hazardous Wastes in the South Pacific Region, which has yet to be ratified by a number of countries.

15. The Waigani Convention was developed over a period of two years and approved at a South Pacific Forum meeting in September 1995 at Waigani. Three countries have ratified the Convention, 10 countries must ratify it for the Convention to go into force. Regarding the control of imported chemicals, an Australia-funded project being developed by SPREP will identify chemical profiles for a number of small island developing States in the Pacific. The project is spearheaded by the United Nations Institute for Training and Research, and has arranged with Environment Australia to assess the ability to manage chemicals, including importation, use and disposal, in eight countries. Papua New Guinea is developing pollutant release and transfer registers that can improve the management of chemicals. In the Marshall Islands, the United States of America has assisted with the removal and disposal of PCB-contaminated oil.

16. In waste reduction and recycling, there have been limited actions in the Pacific. Some countries, such as Tonga and Kiribati, have tried to promote can recycling, but these efforts have been unsuccessful due to the lack of public awareness and proper strategies and on account of the economic unviability of the operations. Fiji and Niue are notable exceptions. The former has an active programme in place for recycling paper, metal and plastics, the latter a well organized system of aluminum can recycling. Although the principles and benefits of composting are well known, and some research has been carried out, comprehensive programmes are lacking. Currently, one research project is being carried out in Kiribati by the Foundation for the Peoples for the South Pacific. Composting is particularly valuable in the Pacific since regional soils are often low in organic matter and deficient in certain essential nutrients.

17. There are no completely sanitary landfills in the Pacific small island developing States, although a few can be described as basic sanitary landfills. Some countries are planning the improvement of existing landfill sites or construction of new ones but are constrained in promoting them due to the lack of finance, technical difficulties and lack of suitable land. Incineration, mainly of medical waste and combustible hazardous materials, has been practised widely in the region, but, it has not generally been efficient because of poor maintenance of plants, manpower shortage and improper choice of facilities.

18. Several countries in the region, such as Samoa and the Federated States of Micronesia, have environmental regulations covering waste management. In some countries, such as the Federated States of Micronesia, waste and coastal management are integrated. Many Pacific island countries have developed strategic plans for the sustainable management of solid and liquid wastes in affected areas, but there are no comprehensive plans or strategies, and implementation leaves much to be desired. Economic incentives to reduce particular types of waste are being used by some Pacific island countries. For example, Samoa has put in place a deposit-refund system for beer and soft drink bottles, and the Federated States of Micronesia has a deposit refund system for cans.

19. Non-governmental organizations in the Pacific are playing a major role in waste management as part of their environmental agenda, particularly in community education, through workshops and practical demonstrations. Greenline Group in Australia made an effort to address problems found

at the dump sites through field visits and communication with stakeholders, including officials, non-governmental organizations and community leaders. This has produced a series of activities, such as monitoring pollution of natural resources and collection of health data. The European Union recently approved a Pacific regional waste awareness and education programme, which will be carried out over the next two years in eight countries and is expected to encourage the theme of waste minimization.

### 2. Progress in the Caribbean

20. All Caribbean island countries share the problem of environmental pollution caused by solid and liquid waste. Since the Global Conference, some initiatives to arrest the continuous deterioration in environmental quality resulting from deficiencies in the waste treatment system, such as the improvement of disposal facilities and management frameworks, have been taken at the national and regional levels. But the safe handling and disposal of wastes still presents a challenge to Governments in this region due to lack of technical manpower, qualified managers and finance. Most existing dump sites are not managed properly and pose a threat to human health. Recycling and composting practices are seldom reported. Under the Organization of Eastern Caribbean States (OECS) solid waste management programme, seven new sanitary landfills will be constructed and six existing ones upgraded, while 22 that are deemed unsuitable for continuous use are scheduled for closure.

21. As a part of the project entitled "Assistance to developing countries in implementing the Basel Convention and in preparing national hazardous wastes management plan", funded by the European Commission, the secretariat of the Basel Convention has undertaken expert missions to Barbados, Cuba, Dominican Republic, Haiti, Jamaica, Saint Kitts and Nevis and Saint Lucia to assist small island developing States in the Caribbean to strengthen their capabilities to manage hazardous wastes. The project has attempted to determine the requirements for addressing critical issues concerning hazardous wastes, the response capabilities of countries in the region and actions to be taken. The project is also designed to establish regular links with the States of the region that are not yet parties to the Basel Convention.

22. Many small island developing States in the Caribbean have yet to ratify the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) and the Basel Convention. Regarding hazardous waste management, some countries have developed the necessary legal frameworks and guidelines. Barbados has commissioned a chemical substances technical working group on the management of hazardous substances. It is currently addressing issues of legislation and safety guidelines to cover the importation, transportation, storage and disposal of toxic chemicals and their wastes. The Bahamas have made provision for regulations concerning toxic waste under the Environmental Health Act, and specific guidelines are being prepared. In Barbados, a programme of action was developed in 1996 to meet needs related to the disposal of hazardous waste; it emphasizes training and the establishment of a technology transfer centre and a regional mechanism for monitoring ships that transport hazardous wastes.

23. Several countries, such as Barbados, the Bahamas and Jamaica, have been able to secure external donor support for improvement of waste management infrastructure, including the development of legal and regulatory frameworks, the strengthening of institutional capabilities, and the construction and maintenance of sewage systems to serve small cities. Legislation relevant to waste management in the region can be found in a number of different laws and ordinances administrated by various government sectors. Since 1994, some island countries, such as Saint Kitts and Nevis, Saint Lucia and Dominica, have developed separate legislation related to solid waste management. A more comprehensive approach to waste management is being attempted by some small island developing States, though this is still at an early stage; for example, Barbados has been executing an integrated solid waste management programme, and has commenced construction work on a sewerage project.

24. OECS, with funding from the World Bank, the Caribbean Development Bank, the European Investment Bank, the European Union and the Global Environmental Facility (GEF), has embarked on a solid waste management project to address the problems of managing ship-generated and shore-generated waste in Antigua and Barbuda, the Commonwealth of Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. The project's objectives are to improve the effectiveness of solid waste collection and disposal facilities, reduce water pollution caused by ship-generated solid waste, assist in the preparation of plans to address the problems of liquid waste treatment, and identify regional opportunities for the minimization and recycling of solid waste.

25. Regarding environmental monitoring, some countries have agreed to a proposal of the Caribbean Environmental Health Institute to conduct monitoring of the critical environmental parameters associated with the operation of landfills. It is expected that routine monitoring will identify

pollution resulting from waste handling and contribute to the selection of appropriate measures to protect them. Since there is no effective regional coordinating mechanism in place in the Caribbean regarding waste management, some projects that have been implemented at a regional level cannot be further developed.

### 3. Progress in other regions

26. Small island developing States in other regions have similar problems related to solid and liquid waste management. Sustainable and effective frameworks on waste management are lacking, although many initiatives are under way, particularly in the area of legislation. The present section of the report is limited by the lack of information, and serves only to outline a few activities related to sound waste management strategies.

27. In Seychelles, the Environmental Protection Act, which includes waste management and control of toxic and hazardous substances, was enacted in 1994. It aims to provide a comprehensive mechanism for pollution protection and the improvement of waste handling practices. In 1995, related regulations giving more detailed guidance were approved. Under a national environmental investment programme, Mauritius launched a sewage master plan study with the objective of identifying programmes to provide a long-term solution for the safe disposal of liquid waste. Mauritius has a well developed sanitary landfill and a plastic recycling factory. New initiatives for the promotion of waste reduction have been implemented, such as reusing bottles through a deposit-refund system. Other small island developing States in the Indian Ocean are exploring the possibility of sending their used plastics to Mauritius for recycling.

## B. International efforts aimed at assisting small island developing States in coping with the problem

28. Many United Nations organizations and agencies have programmes that contribute directly or indirectly to the sustainable management of waste in small island developing States. A brief summary of some technical cooperation programmes that have a particular impact on waste management in small island developing States is provided below.

29. The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities is being launched by the United Nations Environment Programme (UNEP), in cooperation with regional bodies and other United Nations agencies. Its objectives include protection from pollution caused by sewage, heavy metals, radioactive substances, oils and litter. It is expected that the Global Programme of Action will provide up-to-date information on environmentally friendly technologies for waste management, and will develop a regional strategic programme to address land-based marine pollution, particularly pollution arising from solid and liquid wastes.

30. Several workshops and seminars have been held at the regional level for information exchange and capacity-building on waste management. UNEP and SPREP, in collaboration with Environment Australia, held a regional workshop on waste management in the Pacific in May 1997, aiming at improving government officials' capabilities and promoting information exchange on sound practices. A similar workshop was held in Mauritius by UNEP and the Indian Ocean Commission in December 1997. UNEP provided legal expertise to a regional workshop held at Apia, Samoa, in December 1996 on marine pollution and waste management in the South Pacific. A regional seminar on environmentally sound management of hazardous wastes in the Caribbean was convened in Saint Lucia in October 1996. The seminar, funded by the European Community, was co-hosted by the Government of Saint Lucia and the secretariat of the Basel Convention, to provide countries of the Caribbean with a forum for their concerns with regard to the implementation of the Basel Convention.

31. UNEP has been providing assistance to small island developing States in strengthening environmental legislation, including waste management, through the drafting of legal frameworks. For example, the Governments of Kiribati, Samoa and Sao Tome and Principe are being assisted in drafting a framework environmental law, including provisions on waste management. Under a UNEP/United Nations Development Programme joint project on environmental law and institutions in Africa, Sao Tome and Principe is being assisted in carrying out a study on urban waste management. In terms of capacity-building in the field of legislation, lawyers from such small island developing States as Barbados, Cape Verde, Cuba, Dominican Republic, Fiji, Jamaica, Kiribati, Maldives, Mauritius, Seychelles, Saint Kitts and Nevis, Sao Tome and Principe, and Samoa, have been trained in various aspects of environmental law, including management of hazardous wastes.

32. The International Maritime Organization, in cooperation with GEF, is assisting 22 countries in the Caribbean region to overcome the legal and technical obstacles that hinder the appropriate implementation of MARPOL 73/78. The project is focused on the assessment

of existing systems, the development of criteria for port waste reception facilities and the development of integrated waste management options. This project was conceived as the first phase of a long-term process of comprehensively cleaning up and protecting the Caribbean sea. A draft code of conduct for pollution prevention from small ships in marinas and anchorages in the Caribbean was endorsed by countries at a forum in November 1996 in Trinidad and Tobago. It prescribes best practice guidelines for administrators, facility operators and users.

33. The World Health Organization (WHO) has assisted in developing national implementation plans on waste management and promoting sound practices. For example, WHO supported Maldives in preparing a report that reviewed the organizational, procedural and financial aspects of solid waste management and provided a consultation on hospital waste treatment. It assisted the Federated States of Micronesia and Niue with the storage of pesticides, pending their removal and destruction, and Trinidad and Tobago and Saint Lucia with the training of package plant operators in 1997. It also sponsored an international conference on waste management in Grenada in October 1997.

## IV. Recommendations for future action at the national, regional and international levels

34. Further efforts are needed at all levels to implement the actions, policies and measures identified in the Programme of Action for the Sustainable Development of Small Island Developing States. Higher priority should be given to the economic and financial aspects of waste management. Revenue-generating policies for improving the financing of waste-management facilities should be seriously considered by regional and local Governments in small island developing States. Specific priority actions that could give effect to the objectives of the Programme of Action at the national and regional levels could include:

(a) Improving landfill management, including the selection of optimal technologies and financial mechanisms, such as landfill charges and other levies. The management plan should also encompass operational requirements, with appropriate guidelines/standards, including capacity-building, regular monitoring and measures to be taken in the closure of landfills;

(b) Separating industrial wastes, particularly hazardous wastes, from domestic waste and properly disposing of them. Inventories of industrial waste, pollutants and hazardous waste, and codes of practice need to be introduced for environmentally sound industrial operations in small island developing States, modified, as appropriate, for local use, in close cooperation with regional and international bodies;

(c) Securing suitable long-term storage facilities for hazardous waste and identifying suitable final disposal options;

(d) Improving the efficiency of septic tank systems, where they have been introduced. Sound practices leading to the incorporation of septic sludge into local agricultural and forestry operations should be developed and disseminated;

(e) Making environmental impact assessments mandatory for all projects related to waste disposal.